3G Gaming

Developing network-centric mobile entertainment applications

Exit Games - February 2006

Executive Summary

This whitepaper enlightens how 3G technology enables a new generation of mobile gaming and how gamers, publishers, game developers and operators can benefit from it. The main focus is on how 3G networks enhance both the product development of mobile games and the business models that firms employ to develop them.

The introduction puts the 3G evolution into the context of the mobile gaming history and transitional management styles learned from the console business. The second section, 3G Technology Drivers, describes the key technology drivers and related content business changes of 3G services. It is quite obvious that 3G networks come with broad bandwidth. However latency and presence are less well understood – even though their implications are more important to games. In addition, 3G handsets often come with features not directly related to 3G networks but to games, such as larger screens and 3D graphic drivers. From the business side, flat-rate traffic tariffs and in-application event billing arise.

The third chapter shows what this all means for game development and deployment, especially for advanced network-centric game creation as well as for enhanced business and pricing models in 2006/7. Finally, the paper wraps up with some tips and recommendations for game publishers, developers and professionals from related industries.

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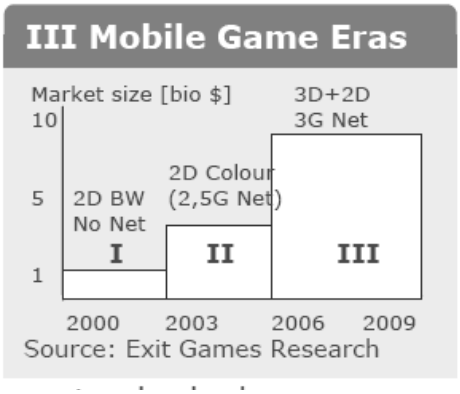
Introduction

With the first downloadable mobile games emerging just at the end of the 20th century, mobile phones represent the youngest emerging game platform. Today, as a solid billion-dollar market, the mobile platform inherits established industry rules from the PC and console business. Platform transition management is probably one of the most valuable lesson in the mobile world, as game features and production costs are heavily determined by handset and network fragmentation.

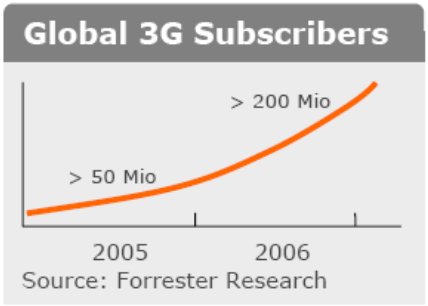


Before 3G gaming, mobile games emerged In two platform eras: black & white 2D singleplayer games, followed by color 2D games with simple network functions appearing in some titles. With emergence of 3G technology, we are now in transition to the third era which adds broadband connectivity as standard plus enhanced computing power and 3D graphics on the device. With 2 billion always-connected phone users, the ubiquitous connectivity makes the mobile phone the "third screen" next to TV and PC. While 3D graphics are universally expected by today's gamers, ever-present 3G connectivity and the social nature of the mobile medium enables a unique entertainment experience not possible within the constraints of other platforms.

So, to successfully manage the platform transition into 3G gaming, what are the key technological drivers and related business changes? And why is 2006 the year to enter the market with 3G optimized mobile game content?

3G Technology Drivers

With ever-present operator marketing on the latest UMTS and EV-DO phones 3G mass market adoption has become evident. 2006 forecasts for 3G penetration are well all above 100 million subscribers, which will enable the first profitable business environments for many game developers.



In regards to the platform transition, six 3G technological drivers will have a major impact on the mobile games business: bandwidth, latency, handset capabilities, flatrate traffic, presence and event billing.

- **High Bandwidth** – The most significant enhancement is 3G broadband download speeds of 384 KB/s to 1 Mbit/s (UMTS, 1xEV-DO). 3.5G networks (HSDPA) will push download speed to 2-10 Mbit/sec, making complete MP3 downloads will just take seconds.

- **Low Latency** – More important to gaming is low latency. The typical 3G round-trip delay for a 32 byte ping is 250-500 ms (UMTS, 1xEV-DO). With 3.5G networks (HSDPA) round trip delays go down to 50-150 ms, although testing on commercial phones remains a pending matter. The initial ping can be delayed up to 5 sec.

- **Handset Capabilities** – Although technically independent from 3G network evolution, 3G phones often come with large storage capacities (Asset up/download), 3D graphic acceleration (JSR 184, HI, OpenGL ES) or 2D vector capabilities (Macromedia Flash, SVG/JSR 226). Obviously these technologies enable connected gaming – and make a significantly larger consumer impact compared to one's old mobile device!

- **Flatrate Traffic** – New core technology permits special flat-rate billing in (some 2,5G and) 3G networks, thus enabling new tariffs for IP and content. As many leading mobile network operators begin to heavily compete with other broadband wireless technologies such as WLAN or Wi-max, expect flat-rate volume 3G offers to become standard in 2006. Within some operator's walled gardens, off-portal IP traffic will be more expensive than IP on–portal traffic.

- **Presence** – On their transition from GSM / CDMA to All- IP core networks, mobile operators start to offer so called presence services. With the first commercial launches in 2006/7, IMS technology (IP Multimedia Subsystem, a 3GPP standard) will enable SIP based identities (becoming the MSISDN of the future), single-sign-on user management, IM, VoIP, Push-To-Talk and managed application-wake-up – many of these features enhance social applications and connected gaming. Already available today, game lobby solutions like Motricity-M7 allow single-sign-on and user management for 2,5G and 3G networks alike.

- **Event Billing** – With flat-rate traffic enabling heavy content usage, most mobile operators already offer or plan to offer proprietary event billing for applications. Like WAP billing for XHTML portals, interactive J2ME or BREW applications with access to these systems can trigger in-application micro-payments – obviously key for many entertainment business models.

What does this mean for developing games and what does it mean for doing business with network operators?

What it means for Mobile Gaming

First of all, 3G Gaming means a major business opportunity for publishers and game developers alike, as mobile operators will heavily invest into **3G Marketing** for services and content. Rationale: 2,5G games marketing is not a key focus anymore, because 3G gaming "makes a difference in the shop" (Source: Orange) – plus 3G data content drives ARPU.

So, new devices with QVGA screens, 3D or 2D vector graphics and connected functions such as rich content downloads or multiplayer capabilities makes consumers think about an upgrade – and they will most likely pay more for better quality content (Verizon VCAST™ 3D multiplayer games are $12,99 or $4,99/month).

3G makes **connected applications** ubiquitous, thus offering new outlets for game publishing that deliver higher revenue streams and better distribution. In *the* social medium of our age, we expect methods that leverage *social* networks to become the most important innovation of the mobile entertainment industry:

- viral marketing, tell-a-friend and super-distribution
- in-game advertising, sponsored content
- user feedback
- in-game up-selling (level) and cross-selling (wallpapers, new games)

Looking to game creation and development, these are the major **3G gaming paradigms** to manage the platform transition from 2.5G:

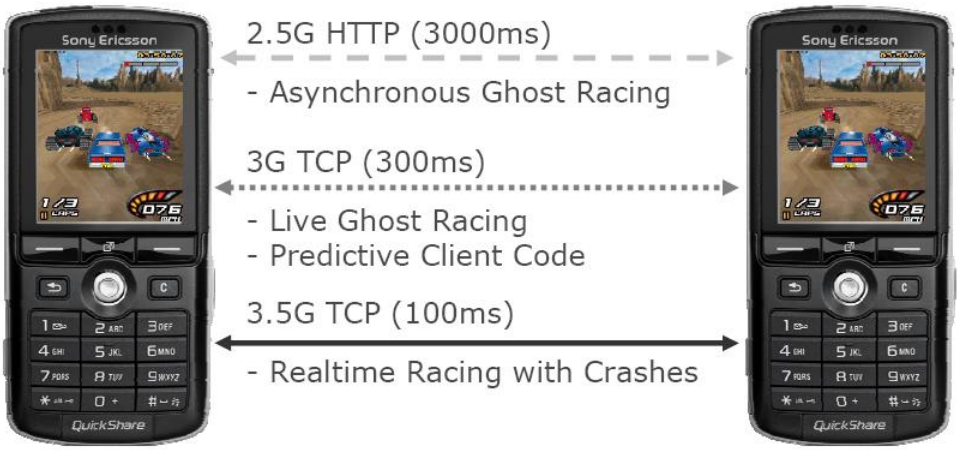
- Bandwidth enables rich game content –EA launched the first 120 KB games in 2004 and in 2005's EA Need for Speed on Verizon was over 15 MB (source: EA Mobile). In other words, 3G killed file size limits over night. It enables dynamic or static level download, mp3 and video downloads, in-game advertising or high-score photo uploads. With powerful handsets, even voice chat is possible.

- **Low Latency means real-time or "feeling your friends"** – Low latency times are key to all interactive communication apps like IM and VoIP as well as connected and multiplayer games. 3G will do the job for 80% of all games, while high interest realtime games like car racing, FPS or MMORPGs will demand 3.5G HSDPA speed. More over, "feeling your friends" through buddy lists, chat, leader boards or multiplayer gaming will keep users playing more and having more impulses to buy games by recommendation or community subscriptions.

Example Latency: You can "see" latency with this simple realtime multiplayer tennis game (Source: Exit Games)

- **3D Phones for core gamers / 2D Flash and SVG for casual and entertainment apps** – Besides the established 2D pixel production options known from Java and BREW, 3D and 2D vector graphics combined with 3G networks open doors for new content segments. Connected 3D multiplayer games will define "state of the art" for 2006 core mobile games, while new dynamic Flash or SVG vector-based content will enable compelling casual games and entertainment applications.

Example 3D phones and latency: 3D 3G gaming Burning Tires II (Source: 3D mobile game developer Fishlabs, www.fishlabs.net)



- **Flat-rate traffic strengthens operator distribution and up-selling** – Maintaining good operator relations will continue as a key task for publishers, as subsidized flatrate traffic will often solely occur for on-portal connected content (ex. streaming video, level downloads or multiplayer). As the subscriber does not need to spend too much budget on traffic, he'll have more money for content and subscription – so publishers should plan to produce sufficient content assets for post-download business.

- **Presence educates users to play with friends** – Connecting games to operator game lobbies helps users to become accustomed to multi-user games (e.g. M7 game lobby Sprint, Cingular) and is a great way to focus on returning users. Advanced IMS integration with IM interconnection or application-wake-up adds value to many games (Chess, Trading Card Games, and Social Location Based Applications etc). However this is not yet common operator practice 2006.

- **Event Billing increases revenue per game** – With many 3G opportunities for post-download business (level, assets, multiplayer subscriptions etc.), operator in-application event billing and subscription payment is the way to monetize the quality and quantity enhancements of 3G game applications. The publisher and operator tasks are to optimize price points and business models to create a trusted, sustainable shopping experience (subscription, pay per asset, pay per play, try-before-buy etc).

Recommendation

Understanding the 3G key technologies and what they mean for 3G gaming is just a small step. Concrete business planning and game implementation are the real challenges for publishers and game developers alike. Hopefully, these suggestions and Exit Games' connected mobile multiplayer solution Neutron can help to support you in meeting these challenges!

3G Enabler	3G Gaming Paradigm	Game Platform Requirement	Neutron
Bandwidth	- provide rich game content, higher quality & longer gameplay	Asset Management System	✓
Latency	- connected action & social fun - "feel your friend"	Distributed Hosting, Low Latency Servers	✓
3G Phones	- Compelling 3D and dynamic games - Store content	Support all 2,5G and 3G devices with 3D and Flash	✓
Flatrate Traffic	- break Kb barrier - support unlimited gaming	Global Carrier Connectivity	✓
Presence	- provide social Impulses - leverage lobbies	Global Carrier Presence Integration	✓
Application Event Billing	- upselling/cross-selling - create buy impulses	Global Carrier Billing Integration	✓

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